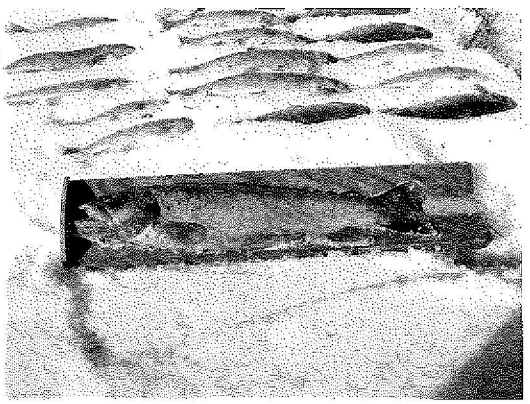
The Effect of Manure Land Application on Surface Water Quality in EPA Region 5

A Summary of Readily Available Information
September 2005

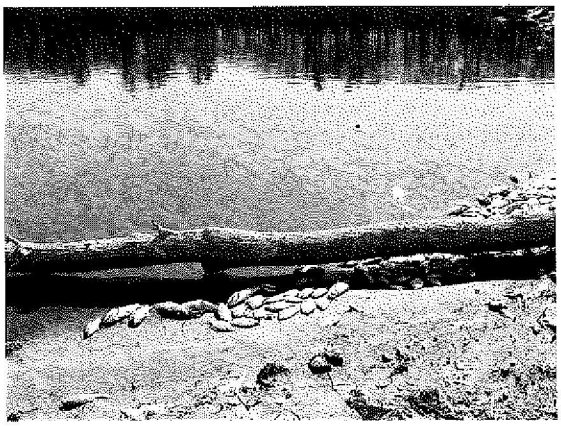
Wisconsin

On July 15, 2004, all 7,400 brown trout in a 10-mile segment of Willow Creek died. The trout suffocated one day after the owner of an animal feeding operation (AFO) applied manure on land in the watershed. Rain caused manure-laden water to run off the land application area to the creek. Meteorologists had predicted the rain. Before the trout died, Wisconsin had designated Willow Creek as an exceptional resource water and class I trout stream. Biologists estimate that eight years will pass before the trout population recovers. Economists estimate that the local economy will suffer $1 million in losses due to a reduction in tourism and recreation.

On February 18, 2005, at least 165 brown and rainbow trout and four sculpins in the West Branch of the Sugar River died (see the pictures at right). The fish suffocated several days after the owner of an AFO applied manure on snow within the watershed. An increase in air temperature caused the snow to melt and the manure-laden water (shown in the center of the top picture) ran off the land application area to the river. Wisconsin had removed the West Branch from its list of impaired waters only four months before the fish kill. Wisconsin was able to remove the river from the list because the State, local governments, and volunteers spent thousands of hours and $900,000 in federal and state funds to improve water quality.



On March 4, 2005, all the bass, bluegills, and other fish in Jersey Valley Lake died (see the pictures at right). Some of the bass measured more than 22 inches in length. The fish suffocated several days after the owner of an AFO applied manure on snow within the watershed. An increase in air temperature caused the snow to melt and the manure-laden water ran off the land application area to the lake. Biologists estimate that five to six years will pass before the fish population recovers.



The above cases provide examples of 52 instances in which the State of Wisconsin recorded runoff or discharges of manure between July 2004 and May 2005. Nine of the discharges killed fish. Eleven contaminated drinking water wells. Seventy-five percent of the cases involved land application of manure. Eighty-five percent were related to rain or snow or soil that was frozen or saturated.

Ohio

The Ohio program for monitoring the health of aquatic biological communities is a model for the Nation. From 1998 through 2000, Ohio monitored the biological, chemical, and physical quality of the surface waters in the Wabash River, Stillwater River, Bokes Creek, Sugar Creek, and Big Walnut Creek watersheds. These watersheds cover more than 1,400 square miles of land in total. Ohio completed four of these projects to evaluate the effect of AFOs on water quality, among other reasons. Separately, through 2004 Ohio collected samples of runoff or ambient water in conjunction with discharges that followed land application of manure in the winter. Pertinent results from all of the above efforts are summarized below.